

# CHEMICAL RECYCLING



Chemical recycling refers to a family of recycling technologies that turns plastic back into its smaller components from which the plastic polymer is made. This enables plastic that is currently hard to recycle via mechanical recycling to be recycled back into plastic that can be used again, including for food grade applications.

## How chemical recycling works:

Plastic is a polymer which means it is a substance which has a structure built up from a large number of identical units – molecules or small chemical compounds known as monomers bonded together via chemical reactions. This process is known as polymerisation.

The polymerisation process that makes plastic can also be reversed via chemical recycling, which breaks the chemical polymer structure back into its smaller components. This ranges from going back to oligomers (chains of monomers) or monomers or all the way back to the basic hydrocarbons.

There are two broad categories of chemical recycling technologies:

**Short loop chemical recycling** – these recycling technologies are suitable for polymers where the chemical bonds that hold the plastic together are easy to break (e.g. PET). It means that only a few steps are needed in the process to produce recycled plastic.

**Long loop chemical recycling** – these recycling technologies are suitable for polymers that have chemical bonds that are harder to break (e.g. polyolefins). To recycle this plastic, the polymer is broken down to basic chemicals products or oils. To make new plastic products, more steps are needed in the process than short loop chemical recycling and these steps produce multiple outputs in the production of new plastics (e.g. plastic, other chemical compounds, fuels).

Chemical recycling technologies can increase the amount and types of plastics that can be recycled back to food grade quality plastic and are a key enabler of creating a circular economy for plastic for two reasons:

- Mechanical recycling is the most energy efficient recycling process for PET - the plastic that is used to make our bottles – back to a food grade quality plastic. However, some PET, such as opaque, coloured or contaminated PET, and other plastics, like the ones used for our closures and labels, are hard to recycle back into food grade plastic via mechanical recycling. A chemical recycling approach is therefore needed to maintain the material value of this plastic and keep it in the circular economy.
- Due to the way PET behaves when it is recycled mechanically, a need will remain for around 20% virgin PET in any closed loop system until it can be replaced by PET that has been recycled back to a 'like virgin' state via chemical recycling. You can read more [here](#) on our vision for a low carbon, circular economy for PET bottles in our markets, removing virgin fossil-based PET in PET bottles.

## Our approach to chemical recycling



For plastic that is hard to recycle back to food grade plastic via mechanical recycling and to drive progress towards circularity, we are supporting the scaling of chemical recycling technologies via investment and collaboration.

As with all technology, the impact of chemical recycling will depend on how it is implemented. CCEP is committed to the responsible and transparent use of chemical recycling technologies and is supporting the [World Wildlife Fund's guiding principles](#) for their application.

To maximise environmental benefits and to ensure that plastic isn't diverted from a more energy efficient recycling process, we believe that plastic should only be broken down into its chemical building blocks as far as it is necessary to recycle the plastic effectively and efficiently so that it can have a material value returned. To find out more about this approach, see our recycling technologies framework.

Chemical recycling technologies are currently at an early stage of development and the Coca-Cola system – both Company and bottlers - is investing to bring short loop chemical recycled material to commercial scale. An example of this is [loniga](#), a full depolymerisation (enhanced) recycling process through which previously unrecyclable or hard to recycle plastic can be transformed to the building blocks needed to create new, food grade quality PET. Another is [CuRe](#), a partial depolymerisation process that transforms hard to recycle and opaque food grade PET back into new food grade PET. Once the CuRe technology is commercialised, CCEP expects to receive the majority of the output from a CuRe-licensed, new build plant.